

CLAIMS

What is claimed is:

1. An information storage medium, comprising:
core mode data which comprises moving picture data, comprising coded stream data of moving pictures, and navigation data controlling playback of the moving picture data;
full mode data which comprises browser mode data made using a markup language and an execution script and/or program mode data made using a program language; and
startup data which comprises data designating one of the mode data to be initially reproduced among the core mode data, the browser mode data, and the program mode data.
2. The information storage medium of claim 1, wherein each of the core mode data, the browser mode data and the program mode data comprises a link to another one of the mode data corresponding to a current mode or a different mode.
3. The information storage medium of claim 2, wherein after the mode data to be initially reproduced is determined according to the startup data, a reproducing apparatus operates according to the determined mode data, and the startup data comprises link information so that a mode transition is executable during playback.
4. The information storage medium of claim 1, wherein the moving picture data further comprises playback unit data defining playback units in which the moving picture data is reproduced, and at least one among the navigation data, the browser mode data, and the program mode data comprises an Application Program Interface (API) reproducing the playback units.
5. The information storage medium of claim 4, wherein the startup data designates one among the core mode data, the browser mode data, and the program mode data.

6. The information storage medium of claim 5, wherein: when the startup data designates the core mode data, the startup data designates a first playback unit to be initially reproduced among the playback units; when the startup data designates the browser mode data, the startup data designates a file made using a markup language and an execution script; and when the startup data designates the program mode data, the startup data designates a file made using a program language.

7. The information storage medium of claim 4, wherein the startup data comprises core mode startup data and full mode startup data, the core mode startup data designating only the core mode data, the full mode startup data designating one among the core mode data, the browser mode data, and the program mode data.

8. The information storage medium of claim 7, wherein: when the full mode startup data designates the core mode data, the full mode startup data designates a first playback unit to be initially reproduced among the playback units; when the full mode startup data designates the browser mode data, the full mode startup data designates a file made using a markup language and an execution script; and when the full mode startup data designates the program mode data, the full mode startup data designates a file made using a program language.

9. A reproducing apparatus for an information storage medium storing multimedia data comprising core mode data and startup data or core mode data, startup data and full mode data, the full mode data comprising at least one among browser mode data and program mode data, the reproducing apparatus comprising:

- a reader which reads data from the information storage medium;

- a presentation engine which decodes and reproduces the data read by the reader corresponding to moving picture stream data;

- a navigation engine which processes navigation data, in the read data, reproducing the moving picture stream data;

- a browser engine which processes the data read by the reader corresponding to the browser mode data;

- a program engine which executes the data read by the reader corresponding to the program mode data;

an application manager which determines one of the core mode data, the browser mode data, and the program mode data to be initially reproduced according to the startup data in the data read by the reader, controls an engine corresponding to the determined one of the mode data, and performs mode transition; and

a blender which blends an output of the presentation engine and at least one among an output of the browser engine and an output of the program engine into a single output.

10. The reproducing apparatus of claim 9, wherein the application manager initially reproduces the determined one of the mode data designated by the startup data, then processes another data corresponding to a current mode or a different mode according to a link in the determined one of the mode data designated by the startup data, and performing the mode transition when necessary.

11. The reproducing apparatus of claim 10, wherein after the application manager determines the mode data to be initially reproduced according to the startup data, the application manager controls operations of the reproducing apparatus according to the determined mode data, and performs the mode transition during playback referring to link information in the startup data.

12. The reproducing apparatus of claim 9, wherein moving picture data stored in the information storage medium comprises the moving picture stream data and playback unit data defining playback units in which the moving picture stream data is reproduced;

at least one among the navigation data, the browser mode data, and the program mode data comprises an Application Program Interface (API) reproducing the playback units; and

when at least one among the navigation engine, the browser engine, and the program engine performs the API, the reproducing apparatus provides a signal controlling playback to the presentation engine to control playback of the moving picture stream data.

13. The reproducing apparatus of claim 12, wherein the startup data designates one among the core mode data, the browser mode data, and the program mode data.

14. The reproducing apparatus of claim 13, wherein when the startup data designates the core mode data, the startup data designates a first playback unit to be initially reproduced among the playback units, and the navigation engine processes the data designating the playback unit;

when the startup data designates the browser mode data, the startup data designates a file made using a markup language and an execution script, and the browser engine processes the data designating the file; and

when the startup data designates the program mode data, the startup data designates a file made using a program language, and the program engine processes the data designating the file using the program language.

15. The reproducing apparatus of claim 12, wherein the startup data comprises core mode startup data and full mode startup data, the core mode startup data designating only the core mode data, the full mode startup data designating one among the core mode data, the browser mode data, and the program mode data; and

when the full mode data is reproducible by the reproducing apparatus the reproducing apparatus initially reproduces data designated by the full mode startup data.

16. The reproducing apparatus of claim 15, wherein when the full mode startup data designates the core mode data, the full mode startup data designates a first playback unit to be initially reproduced among the playback units, and the navigation engine processes the full mode startup data designating the playback unit;

when the full mode startup data designates the browser mode data, the full mode startup data designates a file made using a markup language and an execution script, and the browser engine processes the full mode startup data designating the file; and

when the full mode startup data designates the program mode data, the full mode startup data designates a file made using a program language, and the program engine processes the full mode startup data designating the file using the program language.

17. The reproducing apparatus of claim 9, wherein the application manager comprises a user input receiver and a user input processor to process a user's input, thereby controlling one of the presentation, navigation, browser and program engines corresponding to the user's input.

18. A reproducing apparatus for an information storage medium storing multimedia data comprising core mode data, startup data and full data, the reproducing apparatus comprising:

a reader which reads data from the information storage medium;

a presentation engine which decodes and reproduces the data read by the reader corresponding to moving picture stream data; and

a navigation engine which processes navigation data in the data reproducing the moving picture stream data read by the reader,

wherein, when the information storage medium is loaded in the reproducing apparatus which is unable to recognize the full mode data, the startup data initiates reproduction of only the core mode data and the presentation engine reproduces only the core mode data designated by the startup data.

19. A reproducing method for an information storage medium storing multimedia data comprising core mode data and startup data or core mode data, startup data and full mode data, the reproducing method comprising:

setting one mode among a core mode and a full mode according to the startup data designating mode data to be initially reproduced among the core mode data and the full mode data; and

reproducing the core mode data or the full mode data according to the set mode.

20. The reproducing method of claim 19, wherein moving picture data comprising coded moving picture stream data and navigation data controlling playback of the moving picture data are reproduced in the core mode, and at least one among browser mode data made using a markup language and an execution script and program mode data made using a program language is reproduced in the full mode.

21. The reproducing method of claim 20, wherein each of the browser mode data and the program mode data comprises a link to other data corresponding to a current mode or data for a different mode, the reproducing method further comprising reading the other data corresponding to the current mode or the data corresponding to the different mode according to the link comprised in each of the mode data and changing modes when necessary.

22. The reproducing method of claim 21, wherein after the mode data to be initially reproduced is designated according to the startup data, the reproducing the core mode data or the full mode data further comprises performing mode transition during playback referring to a link comprised in the startup data.

23. The reproducing method of claim 20, wherein the moving picture data further comprises playback unit data defining playback units in which the moving picture stream data is reproduced,

at least one among the navigation data, the browser mode data, and the program mode data comprises an Application Program Interface (API) reproducing the playback units, wherein the moving picture stream data is reproduced by performing the API.

24. The reproducing method of claim 23, wherein the startup data designates one among the core mode data, the browser mode data, and the program mode data.

25. The reproducing method of claim 24, wherein when the startup data designates the core mode data, the startup data designates a playback unit to be initially reproduced among the playback units; when the startup data designates the browser mode data, the startup data designates a file made using a markup language and an execution script; and when the startup data designates the program mode data, the startup data designates a file made using a program language.

26. The reproducing method of claim 23, wherein the startup data comprises core mode startup data and full mode startup data, the core mode startup data designating only the core mode data, the full mode startup data designating one among the core mode data, the browser mode data, and the program mode data.

27. The reproducing method of claim 26, wherein when the full mode startup data designates the core mode data, the full mode startup data designates a playback unit to be initially reproduced among the playback units; when the full mode startup data designates the browser mode data, the full mode startup data designates a file made using a markup language and an execution script; and when the full mode startup data designates the program mode data, the full mode startup data designates a file made using a program language.

28. An information storage medium, comprising:
core mode data which comprises moving picture data and navigation data controlling a playback of the moving picture data in a core mode; and
full mode data comprising at least one of program mode data and browser mode data controlling at least one of a respective corresponding interactive program and browsing program, wherein the playback of the moving picture data is further controlled in response to an application program interface (API) in the at least one of the program mode data and the browser mode data.

29. The information storage medium of claim 28, further comprising:
startup data designating one of the core mode data and the full mode data to be reproduced upon initiating a reproduction of the information storage medium.

30. The information storage medium of claim 29, wherein the startup data further comprises links to the core mode data, the program mode data and the browser mode data, wherein a mode change from one of the program mode data to the core mode data to the other is carried out depending on the startup data designation.

31. The information storage medium of claim 28, further comprising:
startup data designating both the core mode data and the full mode data to be reproduced upon initiating a reproduction of the information storage medium.

32. The information storage medium of claim 31, wherein when the information storage medium is loaded in a reproducing apparatus which is unable to recognize the full mode data, the startup data initiates reproduction of only the core mode data.

33. The information storage medium of claim 32, wherein the core mode data does not comprise links corresponding to the mode change.

34. The information storage medium of claim 31, wherein when the information storage medium is loaded in a reproducing apparatus which recognizes the full mode data, the startup data selectively initiates reproduction of one of the core mode data and the full mode data prior to the other.

35. The information storage medium of claim 34, wherein the core mode data comprises links corresponding to entry points in the full mode data.

36. The information storage medium of claim 35, wherein the full mode data comprises links corresponding to entry points in the core mode data.

37. The information storage medium of claim 34, wherein the program mode data comprises links corresponding to entry points in the core mode data and the browser mode data, respectively.

38. The information storage medium of claim 34, wherein the browser mode data comprises links corresponding to entry points in the core mode data and the program mode data, respectively.

39. The information storage medium of claim 34, wherein the program mode data comprises links corresponding to entry points in the core mode data and the browser mode data, the browser mode data comprises links corresponding to entry points in the core mode data and the program mode data, and the core mode data comprises links corresponding to entry points in the program mode data and the browser mode data, wherein the respective entry points designate a portion of the corresponding one of the core mode data, the program mode data, and the browser mode data to be reproduced.

40. A reproducing apparatus using an information storage medium, comprising:
a reader which reads startup data, core mode data and full mode data from the information storage medium;

a buffer which buffers the core mode data and the full mode data; and
a reproducer which reproduces the startup data first and then reproduces the core mode data and the full mode data based on commands designating an order of reproduction of the core mode data and the full mode data.

41. The apparatus of claim 40, wherein the startup data designates only the core mode data to be reproduced first.

42. The apparatus of claim 40, wherein the startup data designates one of the core mode data and the full mode data to be reproduced first.

43. The apparatus of claim 42, wherein the full mode data comprises at least one of program data enabling interaction with a user and browsing data enabling browsing corresponding to a page unit comprising resources called by a markup document.

44. The apparatus of claim 43, wherein the reproducer comprises:
a browsing engine reproducing the browsing mode data and executing the corresponding page unit called by the markup document;
a program engine reproducing the program mode data and executing corresponding program commands;
a navigation engine reproducing and executing navigation commands in the core mode data controlling reproduction of the core mode data;
a presentation engine reproducing the core mode data in response to the navigation commands from the navigation engine; and
an application manager controlling reproduction and mode conversion of the core mode data, the browsing mode data, and the program mode data based on the reproduced navigation commands, the page units, and the program commands, wherein the application manager controls the respective corresponding engine to reproduce and execute the startup data first.

45. The apparatus of claim 44, wherein the application manager controls the reproduction and mode conversion through an application program interface (API).

46. A computer readable recording medium recording a program that executes a method of reproducing an information storage medium storing multimedia data comprising core mode data and startup data or core mode data, startup data and full mode data, wherein the method comprises:

setting one mode among a core mode and a full mode according to the startup data designating mode data to be initially reproduced among the core mode data and the full mode data; and

reproducing the core mode data or the full mode data according to the set mode.